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# मानक

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IS 11781 (1986): Stencil Templates and Pen Tips for English Lettering [PGD 22: Educational Instruments and Equipment]



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*Indian Standard*  
SPECIFICATION FOR  
STENCIL TEMPLATES AND PEN TIPS  
FOR ENGLISH LETTERING

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BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## SPECIFICATION FOR STENCIL TEMPLATES AND PEN TIPS FOR ENGLISH LETTERING

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# *Indian Standard*

## SPECIFICATION FOR STENCIL TEMPLATES AND PEN TIPS FOR ENGLISH LETTERING

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 7 August 1986, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee had been approved by the Mechanical Engineering Division Council.

**0.2** This standard deals with mechanical type cut-through stencil templates and pen tips for English lettering used extensively in drawing offices for writing numerals and letterings on drawings and charts for characters having line thickness to height ratio of 1 : 10 and 1 : 14.

**0.3** Taking into consideration the views of producers and consumers the sectional committee responsible for the preparation of this standard felt that it should be related to the manufacturing practices followed in the country in this field.

**0.4** Metric system has been adopted in India and all the values in this standard have been given in this system.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

**0.6** This standard is intended chiefly to cover the technical provisions relating to stencil templates and pen tips, and it does not include all the necessary provisions of a contract.

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### 1. SCOPE

**1.1** This standard covers the requirements of mechanical type cut-through stencil templates and pen tips for English lettering.

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\*Rules for rounding off numerical values ( *revised* ).

## 2. TYPES

**2.1** The following four types (patterns) of stencil templates are recommended.

**2.1.1 Pattern A** — One piece stencil templates, moulded or milled with central support ( see Fig. 1 ).



FIG. 1 'M' PROFILE TWO GROOVES TEMPLATE WITH CENTRAL SUPPORT

**2.1.2 Pattern B** — One piece stencil templates, moulded or milled without central support ( see Fig. 2 ).

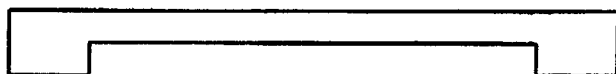


FIG. 2 'U' PROFILE TEMPLATE WITHOUT CENTRAL SUPPORT

**2.1.3 Pattern C** — Composite templates having plastic channels pasted or attached on long edges ( see Fig. 3 ).

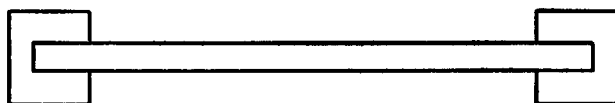


FIG. 3 PLASTIC CHANNEL TEMPLATE

**2.1.4 Pattern D** — Composite templates having metallic channels pasted or attached on long edges ( see Fig. 4 ).

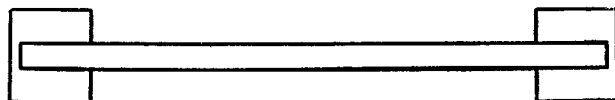


FIG. 4 METALLIC CHANNEL TEMPLATE

## 3. MATERIALS

**3.1** Stencil templates shall be made of coloured plastics, such as butyrate or polymethyl methacrylate (acrylics) or rigid polyvinyl chloride or polyvinyl chloride copolymer.



**3.2** The material shall be transparent, bright and clean and shall be reasonably free from spots, blisters, porosity, bubbles, scratches and similar other defects.

**3.3** In case of pattern C templates the channels shall be made from hard plastics. In case of pattern D templates the channels shall be of suitably anodized aluminium section or any other suitable material having adequate finish.

**3.4** The pen tips shall be made of non-magnetic stainless steel like 'Austenitic — Stainless steel'.

#### **4. GENERAL REQUIREMENTS**

**4.1** The grooves for letter, numerals and other symbols on the templates shall be such as to reproduce these characters in conformity with IS:9609-1983\*. The concerned recommended permissible tolerances have been given in Table 1 for characters having line thickness to height ratio of 1 : 10 and in Table 2 for characters having such ratio of 1 : 14.

**4.2** Stencil templates shall be rectangular in shape having fully moulded milled or machined edges. The composite templates shall have plastic or metallic channels on the two long edges.

**4.3** The grooving shall be in straight line along long edges which shall be parallel to each other.

**4.4** The templates shall normally have two grooved lines with capital letters and numerals in one line and lower case ( small ) letters and mathematical symbols in the other line.

**4.5** Stencil templates with 14 and 20 mm letter heights may be made in more than one piece so as to cover all capital letters, numerals, lower case letters and mathematical symbols.

**4.6** Minimum gap between the paper surface and the bottom of the grooved portion of the template shall be one millimetre, when kept in the working position.

**4.7** Minimum blank space on either side of characters shall be 10 mm.

**4.8** Minimum distance from either edge of the stencil template to the relative base line of characters shall be 8 mm.

**4.9** Minimum thickness of the grooved portion of the stencil template shall be 0.7 mm.

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\*English lettering for general engineering drawings.

**4.10** The recommended sizes of the pen tips to be used with the stencil templates shall be as given in Table 1 and Table 2 read with Fig. 5. The diameter  $d_1$  of the tip shall be such that with the pen held vertically and the line drawn at a speed of 2 to 4 cm/s, the tolerances for the line widths shall not exceed  $\pm 10$  percent of diameter  $d_1$ . For this purpose, the ink recommended by the manufacturer and the smooth tracing paper 90-95 g/m<sup>2</sup> shall be used.

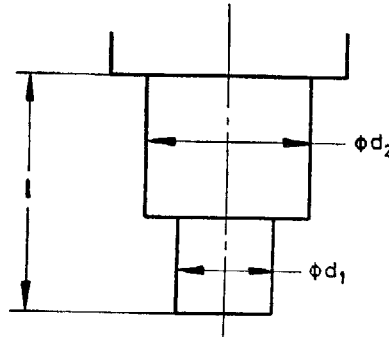


FIG. 5 PEN TIP

**4.11** The detailed design of the pen shall be left to the manufacturer so far as it covers the requirements of pen tips given in **4.10**.

**4.12** Stencil template and pen tip shall match with each other to ensure proper working.

## 5. WORKMANSHIP AND FINISH

**5.1** The characters shall be uniformly and neatly grooved or moulded. The workmanship and finish shall be of the best grade and to the entire satisfaction of purchaser.

## 6. TESTS

**6.1** The templates and pen tips shall be tested to conform to the requirements given under **3**, **4** and **5**.

## 7. MARKING

**7.1** The stencil templates and the pens shall be marked with the manufacturer's name or trade-mark and the year of manufacture.

**TABLE 1 PERMISSIBLE TOLERANCES ON TEMPLATES AND PEN TIPS**  
( For characters having line thickness to height ratio of 1:10 )

( Clause 4.10 )

SL No.	SIZE OF TEMPLATE OR HEIGHT OF CAPITAL LETTERS ON PAPER mm	TEMPLATE				PEN TIP			
		Groove Width	Permissible Variation	Dia of Shank $d_2$	Maximum Permissible Variation in $d_2$ mm	Minimum Length of Shank $l$	Identifica- tion on Colour	Minimum Width of Template	Minimum Length of Template
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	2.5	0.35	+0.07 +0.03	0.35	-0.03	3.5	White	30	130
ii)	3.5	0.50	+0.08 +0.03	0.50	-0.03	4.0	Yellow	30	170
iii)	5.0	0.70	+0.10 +0.03	0.70	-0.03	4.0	Brown	30	240
iv)	7.0	1.00	+0.12 +0.03	1.00	-0.03	4.0	Blue	40	300
v)	10.0	1.40	+0.15 +0.04	1.40	-0.06	4.0	Orange	50	400
vi)	14.0	2.00	+0.20 +0.05	2.00	-0.06	4.0	Green	40	280
vii)	20.0	2.80	+0.25 +0.05	2.80	-0.06	4.0	Grey	50	350
viii)	25.0	3.00	+0.25 +0.05	2.80	-0.06	4.0	Black	55	350

NOTE 1 — Additional size of 25 mm stencil template may also be manufactured if agreed to between the purchaser and the manufacturer with the permissible tolerances as given in Tables 1 and 2 at SI No. 8.

NOTE 2 — 14 mm and 20 mm templates are manufactured in 4 parts (each of 350 mm length), whereas 25 mm template can be made in 5 parts, without increasing the length of the template.

**TABLE 2 PERMISSIBLE TOLERANCES ON TEMPLATES AND PEN TIPS**  
 ( For characters having line thickness to height ratio of 1:14 )  
 ( Clause 4.10 )

Sl No.	SIZE OF TEMPLATE OR HEIGHT OF CAPITAL LETTER ON PAPER mm	TEMPLATE			PEN TIP				
		Groove		Dia of Shank $d_s$ mm	Maximum Permissible Variation in $d_s$ mm	Minimum Length of Shank $l$ mm	Identifica- tion on Colour	Minimum Width of Template mm	Minimum Length of Template mm
		Width mm	Permissible Variation mm						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	2.5	0.35	+0.07 +0.03	0.35	-0.03	3.5	Violet	30	130
ii)	3.5	0.35	+0.08 +0.03	0.35	-0.03	3.5	White	30	170
iii)	5.0	0.50	+0.10 +0.03	0.50	-0.03	4.0	Yellow	30	240
iv)	7.0	0.70	+0.12 +0.03	0.70	-0.03	4.0	Brown	40	300
v)	10.0	1.00	+0.15 +0.04	1.00	-0.03	4.0	Blue	50	400
vi)	14.0	1.40	+0.20 +0.05	1.40	-0.06	4.0	Orange	40	280
vii)	20.0	2.00	+0.25 +0.05	2.00	-0.06	4.0	Green	50	350
viii)	25.0	3.00	+0.25 +0.05	2.80	-0.06	4.0	Black	55	350

NOTE 1 — Additional size of 25 mm stencil template may also be manufactured if agreed to between the purchaser and the manufacturer with the permissible tolerances as given in Tables 1 and 2 at Sl No. 8.

NOTE 2 — 14 mm and 20 mm templates are manufactured in 4 parts (each of 350 mm length), whereas 25 mm template can be made in 5 parts, without increasing the length of the template.

**7.1.1** The templates shall also be marked with the pattern of template, the height of the character,  $d/h$  ratio and the size of the pen to be used while the pen shall be marked with its size.

**7.1.2** The templates may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## **8. PACKING**

**8.1** Each template and pen shall be individually packed in a polythene bag or in a suitable container. A full set of templates shall be packed in a suitable packing case for transit and storage.

**INTERNATIONAL SYSTEM OF UNITS (SI UNITS)**

**Base Units**

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

**Supplementary Units**

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Plane angle	radian	rad
Solid angle	steradian	sr

**Derived Units**

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>	<i>Definition</i>
Force	newton	N	1 N = 1 kg. m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>